PENSAR ENFERMAGEM
Revista Científica | Journal of Nursing

Nurses adverse events report adding safety to pediatric nursing

Joana Isabel Cordeiro e Carvalho[1]
orcid.org/0000-0002-4249-7356

Pedro Aguiar[2]
orcid.org/0000-0002-0074-7732

[1]Master. Neonatology Unit. Department of Pediatrics. Santa Maria Hospital. University Hospital Centre, Lisbon North

[2]PhD. National School of Public Health - Nova University Lisbon. Comprehensive Health Research Centre – Nova University Lisbon. Public Health Research Centre - Nova University Lisbon.

Abstract

Introduction
Adverse Events remain a current challenge in healthcare, being defined as incidents that resulted in unnecessary harm to the patient. The choice of the pediatric population the object of this study is based on certain characteristics making it the most susceptible to Adverse Events. Reporting them is a key action of the strategy to reduce its occurrence, while Nurses remain essential elements to the process. The ultimate goal is Patient Safety, the reduction of the risk of unnecessary healthcare-related harm to an acceptable minimum.

Objective
Describe Nurses' Adherence to Adverse Events Reporting and the Factors associated with it in a Pediatric setting.

Methods
A Cross-sectional Observational Study is presented, based on a survey conducted in the Pediatrics Department of a hospital. The study included 88 categorical variables, related to respondents' perception of Adverse Events, Errors, Incidents and Patient Safety. Univariable, bivariable, and correlation analysis were used.

Results
A total of 69% of nurses did not report any Adverse Event in 2019. The events more frequently reported were those with the most serious consequences for the patients (54%) and those related to organizational dysfunctions of the institution (74-90%). Factors which facilitate the occurrence of Adverse Events include the lack of human resources (19%), communication failures and overtime (17%), and the main barrier to Reporting is forgetting to do so when there is a greater workload (63%).

Conclusion
A low percentage of reporting related to nurses' adherence to adverse events was found in this investigation. This highlighted the need to invest in the institution's Safety Culture by enhancing healthcare professionals' awareness of the importance of their role in improving Patient Safety. Integrating notification into the daily practice of professionals, using continuous awareness enhancement, strengthening multidisciplinary teams, investing in communication and down grading workload is essential and can facilitate improvement.

Keywords
Patient Safety; Risk Management; Quality Improvement; Adverse Event; Medical Error; Pediatric Nursing.

Corresponding author:
Joana Carvalho
E-mail: joanaisabelecarvalho@gmail.com

Received: 13.11.2022
Accepted: 16.03.2023

How to cite this article: Carvalho J, Aguiar P. Nurses adverse events report adding safety to pediatric nursing. Pensar Enf [Internet]. 2023 Apr; 27(1):30-36. Available from: https://doi.org/10.56732/pensarenf.v27i1.212

Introduction

Adverse Events (AE), defined as incidents that resulted in unnecessary harm to the patient,[1] remain a serious Public Health problem.[2] They occur in hospital, primary health care and long-term care settings.[3] Regardless of context, they affect patients and their family, have direct consequences in professional, organizational, economic, and social levels, leading to a lack of trust in health providers and organizations where they occur.[3-4]

Errors or AE in healthcare aren't new, going back more than 150 years, when the first records were collected by Florence Nightingale in the Crimean War.[5] Several figures intervened and promoted Quality Improvement and Patient Safety, as highlighted by Ernest Codman, Avedis Donabedian and the Institute of Medicine.[5-10] A journey with a single purpose: harmless, timely, and undelayed care, based on evidence and guidelines, for all patients, responding to their individual and specific needs.[11]

However, it is unequivocal that the scientific-technological evolution, which allows advances in medicine, generates situations leading to Errors and AE. Thus, it becomes necessary to implement strategies to avoid and minimize these situations.

Reporting potentially dangerous situations for the patient, Near Misses, Errors and AE is a strong strategy in ensuring Patient Safety.[12-13] Reporting generates awareness of an event with a negative impact on the patient, causing certain harmful consequences, of the factors leading to this event, and of the strategies that can be identified and adopted to avoid it.[14] With the collected data, it is possible to build databases for future analysis by the Risk Management Team, but also share the information with the multidisciplinary team and the rest of the Institution. With this information it is possible to identify factors leading to certain events and develop specific practices to prevent them, and other similar situations.[12-13] Thus, it contributes to build a Safety Culture in the institution, based on trust and shared experiences, without fear of punishment, bearing in mind Patient Safety guidelines during their stay.[10,15-16]

Although health professionals are progressively more aware of the need to Report, it still falls below expectations.[17-18] Several reasons have been given to justify this low adherence, including fear of blame, of administrative and legal sanctions, resistance to bureaucracy, the perception that reports have no impact on the quality of care, the lack of organizational support, late or inadequate feedback, and the lack of knowledge about the Adverse Events Reporting System (AERS).[17,19-21]

In addition, the lack of human resources in health, both physicians and nurses, may result in work hours and providers function overload, leading to the reorganization of health care practices. Professionals focus their attention on patients and the rapid resolution of potentially dangerous situations or Errors that may have occurred, leaving bureaucratic issues in the background, such as AE Reporting. We emphasize that this behavior does not favor Patient Safety or Quality of Care in the long term because it does not allow an anticipation of dangerous situations, nor the context in which Errors occur, preventing it from being repeated in the future.

On the other hand, adherence to reporting seems to depend on the severity level of the Event, the type of Incident and the professional.[20] There is a consensus that healthcare professionals more frequently report the most serious events which include death (tragic harm), disability (moderate harm) and severe harm caused to the patient, when compared to non-harmful events or risk situations.[22-24] Nurses are identified as essential to reporting, not only because they are on the front line of care, but also because they spend more time with patients. Scientific evidence shows that nurses are three times more likely to report when compared to physicians.[20]

It is unanimously recognized that the pediatric population is more susceptible to AE.[25] In addition to the health condition, due to its intrinsic characteristics, it is subjected to complex health care, in different contexts, with multiple players, during which it is possible to identify opportunities for communication failures between the team, that may, in the end, result in potentially dangerous situations for patients.[26]

Some of the Errors, described in the literature, that characterize this population include: Medication and total parenteral feeding errors; Respiratory care, resuscitation, and ventilation errors; Invasive procedure errors and Healthcare-Associated Infections; Patient identification errors; Diagnostic errors;[10] Breast milk errors;[27-28] and Healthcare-associated Infections.[29] Medication errors are the most prevalent and reported in the different care settings.[10,15,30-32]

In association with AE Report, several measures have been taken to prevent the occurrence of Errors in this population, which deserve attention: the adaptation of clinical guidelines, use of the double-check method,[33] trigger tools,[9] barcode systems,[30-31] among others.

In this sense it was elaborated a study which objective was to describe Nurses' Adherence to Adverse Events Reporting and the Factors associated with it in a Pediatric setting. The results confirm the interest in deepening the problem and consequences of AE, the need to continue to invest in Reporting, and the essential role of Nurses in the process.

Materials and Methods

The study was observational, cross-sectional, and quantitative in nature, with the objective of determining nurses' adherence to Adverse Event Reporting and the factors associated with it, in the Pediatric Department of a general hospital in Lisbon.

The subjects of this study were Nurses, Specialist Nurses and Nurse Managers working in the department's services, in a total of 192 nurses. The recruitment of participants was performed through convenience sampling, consisting of all nurses who were working in the period between November 2019 and January 2020. A total of 102 nurses agreed to participate by completing the survey.

DOI: 10.56732/pensarenf.v27i1.212

Data were collected through a survey, after permission was granted by the author, Paula Bruno (2010), published in "Registo de Incidentes e Eventos Adversos: Implicações Jurídicas da Implementação em Portugal". The survey includes 13 closed questions, distributed into two groups: Characterization of the sample (questions 1, 2, 3, 4 and 5) and Respondents' perceptions of AE, Error, Incident Reporting and Patient Safety (questions 6, 7, 8, 9, 10, 11, 12, and 13). Slight changes were made to the original survey, to adapt it to the subjects of the study, without altering its characteristics. The survey was chosen because it assessed the reporting of adverse events by health professionals, intended in this study. The survey was given to the Head Nurses, who were responsible for delivering them individually to each nurse under them. They were later collected by the researcher in a sealed, unmarked envelope to protect participants' privacy and confidentiality.
Data was analyzed using the Statistical Package for the Social Science (SPSS), version 26, with approximately 88 categorical variables. Univariable analysis, presenting frequency distribution tables (%), bivariable analysis using the Chi-square test for comparison of proportions and analysis of correlations of ordinal variables using Spearman's Correlation Coefficient were performed. Fisher's Exact Test was used in place of the Chi-square Test for low expected frequencies, while the 5% significance level was used in hypothesis testing.
The research work was confidential, with guaranteed anonymity of the data throughout the process. Participation in the study was voluntary (without any penalty) and anonymous. A cover sheet was attached to each survey corresponding to the informed consent. To ensure the anonymity and confidentiality of the information, the consent form was separated from the rest of the survey and placed in a separate envelope. The identity of the participants was not known to the researcher or to any third party, and the data remained confidential during and after the study. The research process began with requests for permission to conduct the study, which included the following formal written requests: to the author of the survey, to the Director of the Pediatrics Department, to the Nurse Director and to the Ethics Committee of the hospital. Consent was obtained from all the above.

Results

This chapter presents the results obtained based on the questionnaires applied, representing the Nurses' perception on the questions asked.[34]

Table 1 - Characteristics of the Pediatric Nurses in the sample.

Variable under review	Variable Category	Count: Absolute frequency	Percentage: Relative frequency	(n=)
Sex	Female	96	94,1	(n=102)
	Male	6	5,9	
Age Group	21 a 30 years	33	32,4	(n=102)
	31 a 40 years	30	29,4	
	41 a 50 years	17	16,7	
	51 a 60 years	18	17,6	
	>60 years	4	3,9	
Years of Work	<1 year	17	16,7	(n=102)
	1 a 10 years	25	24,5	
	10 a 20 years	27	26,5	
	20 a 30 years	23	22,5	
	30 a 40 years	10	9,8	
Function/Title	Nurse	73	71,6	(n=102)
	Nurse Specialist	27	26,5	
	Nurse Manager	2	2,0	
Unit Typology	Ambulatory	19	16,7	,(n=102)
	Emergency and Intensive Care	64	62,7	
	Pediatrics	19	18,6	

As showed in table 1, the sample was mostly composed of female nurses (94.1%), aged between 21 and 30 years (32.4%). Most professionals work at the institution for 1 to 30 years (73%), and the category of 10 to 20 years is the most prevalent, reaching 26.5% of the sample. The most prevalent position is that of nurse (71.6%). Approximately 62.7% of the sample worked in the Emergency and Intensive Care services, followed by the Pediatric Ward, with 18.6%, and Ambulatory Care, with 16.7%.
When asked about the AERS, about 98% of the sample reported knowing that the hospital has one of these systems, but only 59.8% agreed with it. About 93.1% of the sample knew that the hospital under study participates in Accreditation Programs, namely the Pediatrics Department.

In 98% of nurses who are aware of the existence of an AERS, 69% answered not having reported any AE in the last year and 31% have reported at least one AE. The most frequently reported AEs are those with more serious consequences to the patient, such as tragic harm (58%) and moderate harm (33%). AEs with no danger to the patient and Near Misses are rarely reported. The service with the highest number of AEs reported was Emergency and Intensive Care (38%), followed by Medical Pediatrics (21%) and Ambulatory Care (18%).

Evaluating the report according to the severity of the AE and the nurses' characteristics (gender, age group and position in the institution), we found that there seems to be no statistically significant association between the frequency of Reporting of the different events and the nurses' characteristics.

With regard to the type of AEs, we found that AEs related to organizational dysfunctions of the institution occurred more frequently: malfunction or defect of medical materials/devices (89%), lack of material/clothing/equipment (82.4%), lack of clinical material and equipment (77.5%), computer system malfunctions (74.5%) and conflicts with the patient/family (73.5%). Product or drug prescription errors (71.6%), product or drug administration errors (64.7%), incorrectly filled or illegible prescriptions (65.7%), and healthcare-associated infections (52.9%) stand out as frequent occurrences. One of the questions allowed us to analyze the sample's perception regarding the AEs that occur and those that are recorded. According to the nurses' perception, we found that the AEs that occur more frequently are those with a higher percentage of notification.

According to the nurses' perception, the most important factor contributing to the occurrence of AEs was the lack of human resources (19%), followed by communication failures and work overload (both with 17%). The main barrier to Reporting was forgetting to do so when there was a heavy workload (63%).

Discussion

Healthcare professionals recognize the importance of the AE report for Patient Safety and Quality of Care Improvement,[17] as well as the need for a local and national system for AE reporting.[24] Despite 98% of the nurses knowing that the hospital has an AERS, only 59,8% agreed with it, which is in line with values found in other studies.[24,35] This value raises some questions, namely nurses' understanding of the system and its adequate use, which AEs to report, how to report and also the development of the feedback process.

About 69% of the nurses refer that they did not report any AE in the previous year, showing a low adherence rate. However, it seems to us that there has been an increase in awareness for AE Notification, since in 2011 non-adherence was 80%[18] at national level. More recent data from the National Patient Safety Agency[36] shows an increase in AE reporting between 2013 and 2015. The observed improvement, a small step in the long path ahead, should safeguard the need for professionals' training, elaboration of strategies and institutional norms that allow the growth of a Safety Culture.

The level of AE severity presents itself as a major factor for Adherence to Reporting. The study data indicate that AEs causing tragic harm (death) (58%) and moderate harm (disability) (33%) were more frequently reported, when compared to non-harmful events or risk situations, which aligns with previous studies.[20,22-24]

The privilege of reporting serious events instead of all situations leads to a lack of data on the real number of AEs that occurred, restricting the prevention of potentially dangerous situations for the patient in future care. The need to report all types of AEs, even those that had no impact on the patient, is imperative for the learning process to be as useful as possible and the implemented interventions to address the identified difficulties.[12-13,37]

The types of AE that occurred more frequently were related to organizational dysfunctions of the institution, corresponding to the results found by Bruno[24] and Martins.[35] However, at the international level, the most frequent AEs in Pediatrics are those related to medication.[10,15,30,32,38] In this study, they present high percentages of occurrence, with product or drug prescription errors, product or drug administration errors and incorrectly filled or illegible prescriptions standing out. On the other hand, according to the nurses' perception, the AEs that occur more frequently are those with the highest percentage of recording.

The difference in AE Reporting percentages detected between the different services may derive from the fact that the sample was mostly composed of nurses from the Emergency and Intensive Care unit (62.7%) and/or because this is one of the services with a higher propensity for the occurrence of AEs.[31]

Nurses pointed out the lack of human resources followed by communication failures and the overload of working hours as facilitating factors for the occurrence of AEs, and these results coincide with the literature findings. This is a recurring situation in the health area, where the lack of human resources remains a reality,[39] leading to an increase in the working hours and the functional overload of health providers.[16,40]

Communication is essential to ensure Patient Safety and Quality of Care and deserves special attention. The Portuguese General Health Direction[41] calls for an effective communication between health professionals, stating that communication failures, with 70% of the main causes of AEs, occur during the transition of care. Patients and family members can be key allies of health professionals to ensure effective and safe communication, since they are the ones who know the clinical situation best and are able to detect miscommunication at shift transitions.[10]

According to the perception of the nurses, the main reason for missing the communication with AERS is being forgetfulness when there is a heavy workload. Working conditions lead to the need to reorganize the health care provided by focusing on patients and on the quick resolution of unexpected or unplanned situations, leaving

DOI: 10.56732/pensarenf.v27i1.212

issues such as AE Reporting in the background. We believe that this behavior, even if it seems the most appropriate at the moment, will not favor Patient Safety and Quality of Care in the long term.

In these contexts, it becomes essential to integrate AE, Error, Near Misses and potentially dangerous situations for the patient report into the daily practice of professionals. The steps to be taken include continuous awareness-raising, strengthening multidisciplinary teams, improving communication and lightening the workload, and at the same time, greater dissemination and accessibility to the system.

At the national level, we advocate greater specificity and detail in the development of Health Policies with a view to promote the Report of AEs in a transversal way, as a framework and path to be followed. In terms of Risk Management, the Report of Incidents, Adverse Events and also Near Misses should be encouraged by all professionals, with a view to resolving the potentially dangerous situations identified and preventing future AEs,[12-13] both for patients and for the health professionals themselves.

At last, it's crucial to value and invest in the qualification of professionals in Risk Management and Patient Safety, in the elaboration of Guideline Standards, as well as the establishment of teams with experience in AE cause analysis and in the preventive identification of possible failures in the system.

To reduce errors in the pediatric setting is recommended the use of pre-made solutions, therapeutic formulas for the pediatric population, barcode system when administering medication or identifying patients, development of protocols.[30-31] Peer review, clinical quality improvement and education, staff training through simulation of clinical situations, and the incorporation of a drug library in the infusion pumps, with a safe dose range that alarms when the programmed dose does not fall within this range, are also advocated.[9] The use of computerized electronic prescribing and therapeutic dispensing systems demonstrated a significant decrease in medication-related errors. The use of trigger tools also seems to have a positive positive impact in preventing AEs by increasing the detection of errors in pediatrics.[9]

This research aimed to describe the adherence to adverse event reporting in pediatrics, based on the nurses' perception of such reporting. A future study, with more refined specifications, may help to clarify some of the issues raised and allow corrective measures to facilitate the AERS improvement.

Conclusion

The growing evolution and demand for the provision of safe care, with minimal risk to the patient and appropriate to their characteristics and needs, has become the motto of health care worldwide. However, and despite the strategies to reduce the risk and negative consequences for the patient, the occurrence of AEs remains a reality.

Reporting of all potentially dangerous situations or situations that have led to negative consequences, particularly for the patient, should be instituted to avoid the normalization and acceptance of errors as routine, as if they were a mandatory consequence of the professionals' practice or performance.

Nurses, as part of the frontline of health care delivery, with a closer contact with the patient and family, can become more aware and experienced in the recognition of situations potentially conducive to the occurrence of Errors and AEs, as well as in their identification, becoming more accountable.

If, on the one hand, the results obtained point to the need to promote the institution's Safety Culture, making health professionals aware of the importance of their role, as individuals and as a multidisciplinary team, to improve Patient Safety, on the other hand, we believe that nurses, as part of the front line of care, are also frequently subjected to AEs, which should also be reported.

We believe that the involvement of health professionals in reporting programs adherence will be greater and stronger if the dissemination, the access to the platform, and the awareness of its use is implemented. As well as the recognition of the real benefits for the patient, the knowledge of the results and corrective measures activated, and even the evolution and interactivity in the operation of the system are improved. If this is understood as transversal to health, in an integrative vision of the duties and rights concerning the professionals themselves, they will be more aware and motivated to individual and group participation.

One limitation of the study was the time gap between data collection and dissemination, because it is the result of a Master's Thesis. Even so, it's considered important to summarize and share this work due to the clear implications for nursing practice, for patients' benefit, and for the quality and safety of health care improvement.

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